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2 September 2004

AUCKLAND OFFICE

**DRAFT**

IP Australia  
PO Box 200  
Woden ACT 2606  
AUSTRALIA

Attention: Michael Hall

Re: Deep Video Imaging Limited  
PCT Application No. PCT/NZ2003/000215  
MULTI-VIEW DISPLAY  
Our Ref: 29993PCX321

Deep Video Imaging Limited have received the Written Opinion dated 6 May 2004.

We enclose Powers of Attorney executed by both of the applicants (Deep Video Imaging Limited and Gabriel Damon Engel) appointing our firm as agent. It would be appreciated if you would advise WIPO of this change in agent and note our new file reference above.

Firstly, in reply to the PCT/IPEA/404 Invitation To Correct Defects in the Demand form which issued on 16 April 2004 we enclose a replacement page 1 of the Demand form in which we have amended the title and the applicant details so that both title and applicants correspond with the Request form filed in this application.

With regard to the Written Opinion dated 6 May 2004 we hereby enclose replacement claims pages 15 to 17 and ask that they replace pages 15 to 19 currently on file.

The replacement claim set is effectively a total replacement of the original claim set and therefore a summary of the amendments which have been made to the claims is considered unnecessary and useless. However, the examiner will note that the replacement claims consists of a single independent claim 1 with 12

claims dependent thereon. Briefly, claim 1 relates to a multiple layer display having first and second display layers capable of displaying video images wherein the second display layer overlaps at least a portion of the first display layer, wherein the transparency of the second display layer is adjustable to control the visibility of the overlapped portion of the first display layer therethrough, wherein both display layers include "image directing means" which direct the images displayed thereon in first and second directions or ranges of directions so that the image displayed on the first and second layers are viewable only at first and second viewing angles or ranges of viewing angles respectively and wherein these viewing angles or ranges of angles are not the same.

The examiner will note that claim 1 therefore covers each of the embodiments shown in figures 2 to 4 of the specification and that the term "image directing means" could include means built into the display layer during manufacture to set the viewing angle or could include subsequently applied controls or devices to effect a change in viewing angle. The preferred range of image directing means are referred to in claims 8 to 10.

The reference in claim 1 to "the transparency of the second layer being adjustable to control the visibility of the overlapping portion of the first display layer through the second display layer" is intended to, for example, cover an embodiment in which the uppermost layer is formed as an LCD screen which of course selectively passes filtered backlighting and also an embodiment in which the uppermost display layer is formed from OLEDs (or more precisely TOLEDs) which selectively emit light in a range of colours towards a viewer or are alternatively practically transparent.

With regard to the documents cited by the examiner, documents D1 to D4 all relate to single layer displays in contrast to the presently claimed multiple layer display and are therefore considered irrelevant. D5 is also considered irrelevant as it does not disclose a multiple layer display as it only includes a single display layer (the clock face 26) which is reflected in a mirror which is not in any way transparent nor substantially parallel to the first display layer.

The examiner states that D6 "teaches a two - screen display" however it is noted that this document actually discloses an "illumination system" (204) behind an "imaging system" (202) wherein the imaging system comprises for example an LCD panel and the illumination system comprises a static hologram and therefore only one of the "display layers" is capable of displaying video images. The examiner will note that claim 1 now requires that the "first and second display layers [be] capable of displaying first and second video images respectively thereon". Furthermore, claim 1 requires that the first and second display layers display images "thereon" whereas, in the case of a holographic image, the hologram is not displayed on the display layer.

With regard to D7, it is noted that this document discloses a holographic projection screen comprising sandwiched first and second curved screens which reflect images from first and second projectors in first and second directions respectively. Accordingly, the display layers are not "substantially planar" as required by claim 1 and because the image produced by the first projector passes straight through the second display layer and the image projected by the second

projector passes straight through the first display layer, neither display layer is "adjustable to control the visibility of the overlapping portion of the first display layer through the second display layer".

With regard to D8, it is noted that neither of the display layers (that is, display layer 22 and display layer 24 or the watch face) are capable of displaying video images thereon and the transparency of the second layer is not adjustable to control the visibility of the overlapping portion of the first display layer through the second display layer. The uppermost display layer (corresponding to the claimed second display layer) includes a series of parallel transparent segments equally spaced so that 50% of the image is transparent and this value is not adjustable.

With regard to D9 it is noted that two display layers are disclosed however the display layers are respectively visible only from opposite sides of the display so that no part of the first display layer is viewed through the second display layer as is required by claim 1.

It is believed that the observations made in Section III of the Written Opinion have been overcome by the replacement claim set.

We look forward to receiving a further Written Opinion in due course.

Yours faithfully  
**JAMES & WELLS**

**Brendon Jonson**  
Senior Associate  
[brendonj@jaws.co.nz](mailto:brendonj@jaws.co.nz)

## CLAIMS

1. A multiple layer display comprising:
  - a first substantially planar display layer,
  - 5 a second substantially planar display layer overlapping at least a portion of the first display layer and positioned substantially parallel thereto, the first and second display layers capable of displaying first and second video images respectively thereon and the transparency of the second layer being adjustable to control the visibility of the overlapping portion of the first
  - 10 display layer through the second display layer,
    - wherein the first and second display layers include image directing means which direct the images displayed thereon in first and second directions, or ranges of directions, respectively so that the images displayed on the first and second display layers are viewable only at first and second
    - 15 viewing angles or ranges of viewing angles respectively, and
      - wherein the first and second viewing angles or ranges of viewing angles are not the same.
2. A multiple layer display as claimed in claim 1, wherein the first and second
- 20 display layers are both liquid crystal display layers.
3. A multiple layer display as claimed in claim 1 or claim 2, wherein a diffusion means is provided between the overlapping portions of the first and second display layers to reduce moiré interference therebetween.
- 25 4. A multiple layer display as claimed in any one of the preceding claims, wherein there is no overlap between the viewing angles or range of viewing angles of the first display layer and the viewing angle or range of viewing angles of the second display layer.
- 30 5. A multiple layer display as claimed in any one of claims 1 to 3, wherein there is some overlap between the viewing angles or range of viewing angles of the first display layer and the viewing angle or range of viewing angles of the second display layer.

6. A multiple layer display as claimed in any one of the preceding claims, wherein viewing angle enhancing means are applied to at least one of said first and second display layers to increase the range of viewing angles at which an image displayed on said at least one display layer is viewable.
7. A multiple layer display as claimed in claim 6, wherein said viewing angle enhancing means comprises a wide angle viewing diffuser positioned in front of one of said display layers.
8. A multiple layer display as claimed in any one of the preceding claims, wherein the image directing means comprise at least one of:
- i) light control film,
  - ii) holographic diffusion film,
  - iii) prismatic film,
  - iv) a parallax barrier, and/or
  - v) a lenticular lens.
9. A multiple layer display as claimed in any one of the preceding claims, wherein the image directing means controls the cell structure of the liquid crystal within at least one of the first or second display layers.
10. A multiple layer display as claimed in any one of the preceding claims, wherein the image directing means is formed by arranging the liquid crystal molecules within at least one of the first or second display layers at a predetermined angle to the surface of that display layer.
11. A multiple layer display as claimed in any one of claims 1 to 4, wherein the image displayed on one display layer is made up of separate interlaced primary and secondary images and a viewing angle dependent filtering means is provided in front of said display layer,
- wherein the primary image is viewable from a range of primary viewing angles and the secondary image is viewable from range of secondary viewing angles, and

wherein the range of primary viewing angles overlaps with either the first or second range of viewing angles of the other display layer and the range of secondary viewing angles overlaps with the second or first range of viewing angles of the other display layer.

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12. A multiple layer display as claimed in claim 11, wherein the viewing angle dependent filtering means comprises a lens stripe pattern.

10 13. A multiple layer display as claimed in any one of the preceding claims wherein additional substantially planar, selectively transparent, display layers are provided beneath the second display layer overlapped with said first and second display layers.

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